UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,030	10/07/2003	Yan Borodovsky	10559-883001/P17485	2700

20985 7590 03/13/2009
FISH & RICHARDSON, PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
CHACKO DAVIS, DABORAH	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
03/13/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YAN BORODOVSKY

Appeal 2009-1669
Application 10/681,030
Technology Center 1700

Decided:[1] March 11, 2009

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 11-18 and 30-37. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6. Claims 11 and 30 are illustrative:

---

[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the Decided Date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

11. A method comprising:

exposing a periodic pattern of alternating non-exposed lines and exposed spaces on a first photoresist, the lines having a first width;

exposing a portion of at least one line to radiation to break continuity of the line and regularity of the periodic pattern by positioning an exposed region with a second width to expose the at least one line, the second width being greater than the first width;

developing the first photoresist;

forming a second photoresist over the first photoresist;

exposing an area of the second photoresist to form a feature over the formerly periodic pattern of the first photoresist, the feature having a third width that is greater than the first width;

developing the second photoresist; and

etching a support using both the first photoresist and the second photoresist as a guide in a same etch step.

30. A method comprising:

receiving a pre-determined design layout;

receiving a pattern layout of alternating, parallel lines and spaces; and

subtracting the design layout from the pattern layout of alternating, parallel lines and spaces to form a remainder layout.

The Examiner relies upon the following references in the rejection of the appealed claims:

Okamoto	US 4,517,280	May 14, 1985
Brueck	US 5,415,835	May 16, 1995
Palmer	US 2002/0078427 A1	Jun. 20, 2002

Appealed claims 11 and 37 stand rejected under 35 U.S.C. § 112, second paragraph. Claims 11-13, 16, 17, and 36-37 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Brueck. Claims 30-34 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Palmer. Claims 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brueck in view of Okamoto. Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Brueck in view of Palmer. Claim 35 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Palmer in view of Brueck.

Appellant does not separately argue any particular claim in the groups of claims separately rejected by the Examiner. Accordingly, the separately rejected groups of claims stand or fall together. Also, as noted by the Examiner, Appellant has not contested the § 103 rejections.

We have thoroughly reviewed each of Appellant's arguments for patentability. In so doing, we agree with the Appellant that the Examiner's § 112 rejection is not sustainable. However, we are in complete agreement with the Examiner that the claimed subject matter is unpatentable over the cited prior art. Accordingly, we will sustain the Examiner's § 102 and § 103 rejections for the reasons set forth by the Examiner, and we add the following primarily for emphasis.

We consider first the Examiner's § 112, second paragraph, rejection of claims 11 and 37. The Examiner finds that there is insufficient antecedent basis for the claim recitation "the formally periodic pattern." However, we agree with Appellant that one of ordinary skill in the art would readily understand that the formally periodic pattern is that pattern resulting from the exposure of a portion of at least one line of the said periodic pattern to radiation to break its continuity and regularity. In other words, the formally periodic pattern results from the two recited "exposing" steps.

We now turn to the Examiner's § 102 rejection over Brueck. Claim 11 calls for a method wherein a second photoresist is formed over a first photoresist that has received two patterned exposures. The sole argument presented by Appellant is that "[t]here is no teaching in Brueck that the original layer of photoresist remains on Brueck's substrate so that Brueck's second photoresist layer can be formed 'over' it, as recited" (Principal Br. 8, first para.). Appellant maintains that "it appears likely that Brueck's first layer is removed after pattern development and transfer, as is conventional" (*Id.*). The relevant section of Brueck cited by both Appellant and the Examiner is found at column 4, lines 30-45, which reads as follows:

> As an alternative method, first a single or multiple set of interferometric exposures are carried out in photosensitive layer. The subsequent pattern is then developed and transferred to a semiconductor substrate by any of the well known commercially available techniques. This substrate is then again recoated with a photoresistive layer, and single or multiple exposure processes can be repeated with the aid of the alignment position sensing arrangement described in Brueck, et al. in U.S. Pat. No. 4,987,461.

> Referring to FIG. 3, the image depicted is a rectilinear array of circular dots on the photosensitive layer about 300 nm apart from each other in the x and y axes. The photoresist layer is developed and transferred into the Si sample by a plasma-etch process.

Appellant interprets this passage to mean that the developed photosensitive layer is removed after its pattern is transferred into the semiconductor substrate by, for example, an etching step, after which the etched substrate is recoated with another photoresist layer. Appellant maintains that "there is no support for the contention that Brueck does not strip a first photoresist prior to applying a second photoresist" (Principal Br. 9, first para.).

We agree with the Examiner, however, that there is factual support for interpreting Brueck as **not** stripping the patterned first photosensitive layer after the pattern is transferred to the semiconductor substrate. In particular, it is a fact that Brueck provides absolutely no disclosure that the developed photosensitive layer is stripped prior to recoating an additional photoresistive layer. As explained by the Examiner, "Brueck does not mention or suggest that after the transferring of the pattern, a stripping process is performed to remove the existing photoresistive layer pattern on the semiconductor substrate" (Ans. sentence bridging pages 10-11). Consequently, we find no error in the Examiner's reasoned conclusion that "it is taken at face value that since no stripping or removal process is suggested or mentioned, that the substrate with the photosensitive pattern is recoated with another photoresistive layer" (Ans. 11, first para.).

We next consider the § 102 rejection of claims 30-34 over Palmer. Palmer, like Appellant, describes a method of providing a pre-determined theoretical mask layout, further providing a pattern layout of alternating, parallel lines from a corrected, contour data set, and subtracting the theoretical mask from the corrected, contoured mask to obtain a desired, remainder layout. The singular argument advanced by Appellant is that "Palmer's "contour data set" is a set of theoretical contours which defines the curvilinear forms which would be created if a proximity corrected mask were actually used" (Reply Br. 5, first para.). Appellant submits that "[a]ny contention that this final bounded contour data set is a layout is hence unreasonable and cannot support an anticipation rejection" (*id.*). However, Palmer expressly discloses that "a method is provided that allows for the efficient testing and verification of mask layouts after they have been subjected to proximity correction techniques" ([0025]). Hence, it cannot be gainsaid that Palmer discloses the actual preparation of mask layouts that are tested and subjected to verification. Furthermore, Appellant has not defined the term "layout" in any way which serves to distinguish layouts within the scope of claim 30 from the mask layouts disclosed by Palmer. Also, we perceive no meaningful distinction between layouts encompassed by claim 30 and the schematic diagrams depicted in Figures 3A-C of Palmer which illustrate the theoretical corrected and contour data sets of the disclosed invention. Accordingly, we agree with the Examiner that the subject matter defined by claim 30 on appeal is reasonably described by Palmer within the meaning of § 102.

Appellant has not contested the Examiner's § 103 rejections in the Principal and Reply Briefs on appeal. Accordingly, we will, perforce, sustain these rejections.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(v)(2008).

AFFIRMED

cam

FISH & RICHARDSON, PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022